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possible by the stages, which, for the first few days of the storm, was little more than half-way from Smith Creek. The remainder of the distance was made on horseback and on foot. For over a week the last half-mile had to be gone afoot.

The weight of snow and ice broke the telegraph and telephone wires frequently, but, as much of this damage occurred near the summit, it was repaired by those who went to meet the stages, and, by this means, the telephone was kept working for a portion, at least, of almost every day. The only other damage of any consequence was the breaking of some glass in the skylight over the main hall of the Observatory, and the breaking of some of the electric wires between buildings.

LICK OBSERVATORY, February 5, 1895.

LIST OF EARTHQUAKES IN CALIFORNIA FOR THE
YEAR 1894.

COMPILED BY C. D. PERRINE.

The following list gives the dates and places of occurrence of earthquakes in California (including, also, a number outside of the State), compiled from observations at Mount Hamilton and reports received at the LICK Observatory, both by letter and newspaper. A number of disturbances have come under our notice which are not properly within our province, but which may possibly have escaped other compilers, and are, therefore, included.

The accounts of shocks in Nevada are, principally, from the Annual Report of the Nevada State Weather Service (Professor C. W. FRIEND, Director) for 1894.

This is a continuation of similar reports printed in Vol. II, p. 74; Vol. III, p. 247; Vol. V, p. 127, and Vol. VI, p. 41, of these *Publications*. A more complete account will be published as a bulletin by the United States Geological Survey. The dates are civil dates. The times are Pacific Standard (120th Meridian).

Roman numerals enclosed in parentheses indicate the intensity on the ROSSI-FOREL scale. The reports of the Lighthouse Board and of the Weather Bureau should be consulted in this connection.

There are, as yet, but few stations on the Pacific Coast equipped with instruments for the observation of earthquakes. Members of the Society, therefore, can assist materially in making these reports more complete and valuable by sending to the LICK Observatory descriptions of shocks which come to their notice.

LIST OF EARTHQUAKE SHOCKS, 1894.

- January 14. Olympia, Tacoma, Wash., 3:25 A.M. Reported by Mr. FRED. G. PLUMMER, of Tacoma.
Vancouver and British Columbia generally.
- January 24. Riverside, 3:50 A.M.
- February 5. Keeler, 9:01 P.M.
- February 7. San José, 2:09 A.M.
- February 8. Los Angeles, 5:45 A.M. (and neighborhood).
- February 15. Hawthorne, Nev., 9:01 P.M. (II).
- March 3. Mount Hamilton, 4^h 42^m 50^s ± P.M. (III). E. S. H.
4^h 43^m 01^s P.M. W.W. C. and E. B. C.
- May 7. Mount Hamilton, 11^h 56^m 7^s P.M. E. E. B.
11^h 56^m 16^s ± 10^s P.M. (III). W. W. C.
10^h 52^m P.M., and 11^h 56^m 45^s P.M. R.H.T.
- July 13. Pine Ridge (60 miles N.E. of Fresno), 8:50 P.M.
- July 18. Ogden, Utah, 3:50 P.M.
- July 29. San Bernardino, 9:15 P.M.; Los Angeles, 9:12 P.M.; Pasadena, 9:17 P.M.; Echo Mountain; Santa Monica, 9:11 P.M.; Santa Ana, 9:15 P.M.; Mojave, 9:12 P.M.; Ontario, 9:12 P.M.
- August 3. Mount Hamilton, 11^h 50^m P.M. ± ½^m (III to IV). E. S. H.
- August 16. Pine Ridge. A recent earthquake (July 13?) is reported as damaging the dam across Stephenson Creek.
- August 22. Lewers' Ranch, Nev., 4:28 A.M. (II).
- September 30–October 1. Mount Hamilton. Some time between the evening of September 30 and the morning of October 1, a slight shock registered on the duplex seismograph, but was not felt by any one.
- September 30. Eureka, 9:36 A.M. and 9:59 A.M.; Sisson.
- October 16. New Hebrides Islands. An outbreak of volcanic eruptions and earthquakes began on October 16th, which lasted for a month, causing much loss of life and great damage to some of the islands. The center of the disturbance was on the island of Ambrim, at an old crater (Mount

Maryun), which became active, sending a stream of lava to the sea, and covering the island and sea for miles around with a dense layer of ashes.

October 23. San Diego, 3:03 P.M.; Coronado; Upper Otay Dam; Campo; National City; San Diego, 4:25 P.M.; Riverside, 3 P.M.; San Bernardino, 2:04 P.M.; Colton, 3 P.M.; Los Angeles, 3:05 P.M.

October 27. Los Angeles, 11 P.M.; San Diego, 11:05 P.M.

November 2. Mexico City, 4:17 P.M.

November 14. Gold Hill, Nevada, 2:02 P.M., and 6:58 P.M.; Lewers' Ranch, Nevada, 7:05 P.M. (I); Carson City, Nevada, 6:55 A.M. (I).

November 15. Carson City, Nevada, 11:07 P.M. (I), 11:25 P.M. (II), midnight (II); Gold Hill, Nevada, (II); Lewers' Ranch, Nevada, midnight (III); Virginia City, Nevada, 11:00 A.M. (II), 11:18 P.M. (II), 11:52 P.M. (II).

November 16–22. Virginia City, Nevada. "Over one hundred shocks of earthquake in this city within the week ending to-day (November 22)."

November 17. Campo, 5 P.M.

November 18. Nevada—Austin, 10 A.M. (II); Carson City, 2:38 A.M. (I), 2:40 A.M. (I), 2:49 A.M. (III), 5:15 A.M. (I), 5:33 A.M. (I), 6:22 A.M. (I); Gold Hill (II); Lewers' Ranch (I); Virginia City, 2:28 A.M. (II), 2:30 A.M. (I), 2:40 A.M. (IV), 5:24 A.M. (I), 6:18 A.M. (II).

November 21. Carson City, Nevada, in night (I); Tacoma, Wash., 6 P.M.; Mount Rainier. From 6:20 to 8 A.M., persons in Seattle and Tacoma report seeing smoke and steam issuing from the top of Mount Rainier. This phenomenon was reported at subsequent times. It was also reported that the shape of the peak had changed. The *Post-Intelligencer* of Seattle sent out an exploring party to investigate the matter. They were not able to reach the summit, but from one of the highest points reached, they report seeing, on December 24, steam jets issuing from the large crater, and a column of black smoke from the small crater. Immense avalanches were seen, and any changes of the contour of the mountain were ascribed to that cause.

November 24. Carson City, Nevada, 10:03 P.M. (II), 11:22 P.M. (III).

- December 4. Carson City, Nevada, 9:39 P. M. (I); Lewers' Ranch, 9:40 P. M. (II).
 December 18. Carson City, Nevada, 9:08 A. M. (II).
 December 21. Gold Hill, Nevada, 2:20 A. M. (II).
 December 23. "San Diego, Riverside, Pomona, and other points."
 December 24. Boise, Idaho, 4 A. M., 6 A. M., 7:10 A. M.
 December 28. Gold Hill, Nevada, 9:15 A. M. (I).
 December 29. Gold Hill, Nevada, 4:30 A. M. (II), 5 P. M. (I).
 December 30. City of Mexico, 10:53 P. M.

LATENT IMAGE OF EXPOSED DRY PLATES.

By PROFESSOR W. J. HUSSEY.

In No. 40 of these *Publications*, page 76, Mr. Perrine has given an account of the change which he has observed in the latent image of exposed dry plates. Since the permanency of the latent image is a matter of great practical importance to photographers and astronomers in all cases where the plates cannot be developed very soon after exposure, the following note may be of interest.

In May, 1891, I made a considerable number of contact positives at the observatory at Ann Arbor. I was unable to develop all of the exposures at the time. In April, 1892, some exposures for views were made that were not developed. These plates were brought to California in June, 1892, and in the following autumn one of the contact positives was developed. Nothing peculiar was noticed in the course of its development. This was at least sixteen months after its exposure. Last month, February, 1895, another of these contact positives was developed, and also one of the views. The former developed fairly well, showing that the image had not faded to any decided extent, if at all, in the course of the forty-five months that the image had lain latent. The view did not develop in a thoroughly satisfactory manner, but apparently from other causes than the fading of the image; probably largely on account of the poor quality of the lens used, and improper focusing.

The contact positives were made on Seed 26 plates, $6\frac{1}{2} \times 8\frac{1}{2}$; the views, on Carbutt "Eclipse" plates, 5×7 .